

AD-A041 060

ARMY ENVIRONMENTAL HYGIENE AGENCY ABERDEEN PROVING GR--ETC F/G 6/6
TOPICAL HAZARD EVALUATION PROGRAM OF CANDIDATE INSECT REPELLENT--ETC(U)
JUN 77 M H WEEKS, B J DESENA

UNCLASSIFIED

USAEHA-51-0847-77

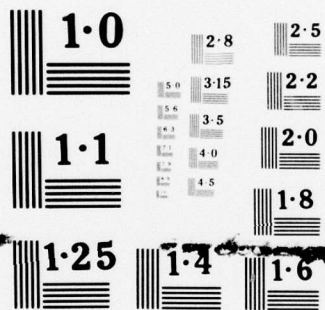
1 OF 1
ADA
041060



NL

END

DATE
FILMED
7-77



NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

AD A 041 060

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36706

PENTYL 2-AMINO BENZOATE

STUDY NO. 51-0847-77

MARCH 1976 - APRIL 1977

Approved for public release; distribution unlimited.



AD No. _____
DDC FILE COPY

US ARMY
ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MD 21010

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 51-0847-77	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Topical Hazard Evaluation Program of Candidate Insect Repellent AI3-36706 <i>Pentyl</i> <i>2-Aminobenzoate</i>		5. TYPE OF REPORT & PERIOD COVERED Final, Mar 76 - Apr 77
7. AUTHOR(s) MAURICE H. WEEKS BRENDA J. DeSENA		6. PERFORMING ORG. REPORT NUMBER 51-0847-77
9. PERFORMING ORGANIZATION NAME AND ADDRESS Commander US Army Environmental Hygiene Agency Aberdeen Proving Ground, MD 21010		8. CONTRACT OR GRANT NUMBER(s) 14/ USAFHA-51-0847-77
11. CONTROLLING OFFICE NAME AND ADDRESS Commander US Army Health Services Command Fort Sam Houston, TX 78234		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 11 27 Jun 77
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE May 76 - Apr 77
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited. 9 Final rept. Mar 76 - Apr 77		13. NUMBER OF PAGES 6
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		15. SECURITY CLASS. (of this report) Unclassified
18. SUPPLEMENTARY NOTES		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) AI3-36706 eye irritation Pentyl 2-Aminobenzoate sensitization Topical Hazard Evaluation oral toxicity candidate repellent Photochemical Skin Irritation skin irritation		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A hazard evaluation of the candidate insect repellent AI3-36706, pentyl 2-aminobenzoate, was performed by means of laboratory animal studies using rats, rabbits and guinea pigs. Based on findings from these studies it is recommended that AI3-36706 be approved for further testing as a candidate tropical insect repellent.		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

038 150



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT/WP

27 JUN 1977

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36706
PENTYL 2-AMINO BENZOATE
STUDY NO. 51-0847-77
MARCH 1976 - APRIL 1977

ABSTRACT

A hazard evaluation of the candidate insect repellent AI3-36706, pentyl 2-aminobenzoate, was performed by means of laboratory animal studies using rats, rabbits and guinea pigs. The technical grade compound produce mild irritation when applied to the intact or abraded skin of rabbits. No injury to the cornea or the conjunctiva were observed after a single application of the technical grade compound to the eyes of rabbits. Ethanol solutions of AI3-36706 did not demonstrate a photochemical skin irritation reaction in rabbits and intradermal injections of solution of AI3-36706 did not cause a sensitization reaction in guinea pigs. Data indicates little acute toxic hazard from accidental ingestion. Based on these findings, it is recommended that AI3-36706 be approved for further testing as a candidate topical insect repellent.

Handwritten checkmark and letter 'A' on a routing slip.

Approved for public release; distribution unlimited.



DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-LT/WP

TOPICAL HAZARD EVALUATION PROGRAM
OF CANDIDATE INSECT REPELLENT AI3-36706
PENTYL 2-AMINO BENZOATE
STUDY NO. 51-0847-77
MARCH 1976 - APRIL 1977

1. AUTHORITY.

a. Letter, US Department of Agriculture - Agricultural Research Service, Southern Region, Insects Affecting Man Research Laboratory, Gainesville, Florida, 11 March 1976.

b. Memorandum of Understanding between the US Army Environmental Hygiene Agency; the US Army Health Services Command; the US Department of the Army, Office of The Surgeon General; the Armed Forces Pest Control Board; and the US Department of Agriculture, effective December 1970 with Amendment No. 1, effective August 1974.

2. REFERENCE. Toxicology Division Procedural Guide, USAEHA, 1972.

3. PURPOSE. The purpose of this program is to provide guidance for further entomological testing of the candidate insect repellent AI3-36706.

4. SUMMARY OF FINDINGS. A hazard evaluation of the candidate repellent AI3-36706, pentyl 2-aminobenzoate, was conducted by this Agency using New Zealand White rabbits for skin and eye studies, Hartley guinea pigs for a skin sensitization study and Sprague-Dawley, Wistar-derived rats for determination of oral toxicity. A tabular presentation of animal toxicity data developed in this Agency follows:**†

* In conducting the studies described in this report, the investigators adhered to the "Guide for the Care and Use of Laboratory Animals," US Department of Health, Education and Welfare Publication No. (NIH) 74-23, revised 1972 - second printing 1974.

† The experiments reported herein were performed in animal facilities fully accredited by the American Association for Accreditation of Laboratory Animal Care.

Approved for public release; distribution unlimited.

Study No. 51-0847-77, Mar 76 - Apr 77

TEST	RESULTS	INTERPRETATION
<u>SKIN IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application to intact and abraded skin of New Zealand White rabbits.	Compound AI3-36706 produced mild primary irritation to the intact skin and to the skin surrounding an abrasion.	USAEHA Category II (ref Appendix).
0.5 ml technical grade compound applied to each of six rabbits.		
<u>EYE IRRITATION STUDIES</u>		
<u>Rabbits</u>		
Single 24-hour application of 0.1 ml technical grade compound to one eye of each of six New Zealand White rabbits.	Compound AI3-36706 did not produce any injury to the cornea or to the conjunctiva.	USAEHA Category A (ref Appendix).
<u>APPROXIMATE LETHAL DOSE (ALD)</u>		
<u>Oral</u>		
Rats (male) - no diluent	ALD>4900 mg/kg Dosages of 2200 mg/kg and higher produced slight muscle tremors.	Presents little lethal hazard from acute accidental ingestion.

TEST	RESULTS	INTERPRETATION
<u>PHOTOCHEMICAL SKIN IRRITATION STUDIES</u>		
<u>Rabbits</u>		
A single application (0.05 ml) of a 25 percent (w/v) solution of the compound (AI3-36706) and of a 10 percent (w/v) oil of Bergamot solution (positive control) in 95 percent ethyl alcohol, were applied to the intact skin of six rabbits. Five minutes after application, the rabbits were exposed to UV light (365 nm) for 30 minutes at a distance of 10-15 cm.	A 25-percent solution of AI3-36706 in ethanol did not cause a photochemical irritation reaction under test conditions. Positive control application and irradiation caused greater irritant effects than in unirradiated skin areas.	Compound AI3-36706 did not cause a photochemical irritation reaction under test conditions and is not expected to cause a photochemical irritation in humans.
<u>Control</u>		
Following UV exposure of the rabbits 0.05 ml of test compound, positive control and diluent were applied to additional skin areas to serve as unirradiated control sites. Application areas were checked for skin irritation reactions at 24, 48 and 72 hours.	No signs of irritation appeared at the unirradiated skin sites.	

Study No. 51-0847-77, Mar 76 - Apr 77

TEST	RESULTS	INTERPRETATION
<u>SENSITIZATION STUDIES</u>		
<u>Guinea Pigs (Male)</u>		
Intradermal injections of 0.1 ml of a 0.1 percent suspension (w/v) of AI3-36706 or of dinitrochlorobenzene (DNCB)* in a mixture containing 1 volume of propylene glycol and 29 volumes of saline.		
Ten test guinea pigs received and challenged with a 0.1 percent solution of AI3-36706.	Challenge dose of test compound (last intradermal injection) did not produce a sensitization reaction.	Compound AI3-36706 did not produce a sensitization reaction under these test conditions and is not expected to produce a sensitization reaction in man.
Ten positive control guinea pigs received and challenged with 0.1 percent suspension of DNCB.	Positive control (DNCB) produced a marked sensitization reaction in ten out of ten guinea pigs.	
Ten cage control guinea pigs:	Cage control guinea pigs showed no greater reaction to test compound and DNCB than were seen in original test groups.	
Five receiving challenge dose of test compound without prior sensitizing doses.		
Five receiving challenge dose of DNCB without prior sensitizing doses.		

* A known skin sensitizer.

Study No. 51-0847-77, Mar 76 - Apr 77

5. CONCLUSION. The technical grade compound produced only mild irritation when applied to the intact or abraded skin of rabbits. No eye or photochemical skin irritation was demonstrated in rabbits and no sensitization reactions were seen in guinea pigs. Data indicate little acute toxic hazard from accidental ingestion of the technical compound.

6. RECOMMENDATION. Under the provisions of the Memorandum of Understanding (reference para 1b), it is recommended that AI3-36706, pentyl 2-aminobenzoate be approved for further testing as a candidate topical insect repellent.

Maurice H. Weeks

MAURICE H. WEEKS

Chief, Toxicity Evaluation Branch
Toxicology Division

Brenda J. DeSena

BRENDA J. DeSENA

PFC

Veterinary Specialist
Toxicology Division

APPROVED:

Arthur H. McCreesh

ARTHUR H. MCCREESH, Ph.D.
Chief, Toxicology Division

Brendan E. Joyce

BRENDAN E. JOYCE, Ph.D.
LTC, MSC
Director, Laboratory Services

APPENDIX

TOPICAL HAZARD EVALUATION PROGRAM
DEFINITIONS OF CATEGORIES OF COMPOUNDS BEING
CONSIDERED FOR ACUTE SKIN APPLICATION

CATEGORY I - Compounds producing no primary irritation of the intact skin or no greater than mild primary irritation of the skin surrounding an abrasion. (INTERPRETATION: No restriction for acute application to the human skin.)

CATEGORY II - Compounds producing mild primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should be used only on human skin found by examination to have no abrasions or may be used as a clothing impregnant.)

CATEGORY III - Compounds producing moderate primary irritation of the intact skin and the skin surrounding an abrasion. (INTERPRETATION: Should not be used directly on the skin without a prophetic patch test having been conducted on humans to determine irritation potential to human skin. May be used without patch testing, with extreme caution, as clothing impregnants. Compound should be resubmitted in the form and at the intended use concentration so that its irritation potential can be reexamined using other test techniques on animals.)

CATEGORY IV - Compounds producing moderate to severe primary irritation of the intact skin and of the skin surrounding an abrasion and, in addition, producing necrosis, vesiculation and/or eschars. (INTERPRETATION: Should be resubmitted for testing in the form and at the intended use concentration. Upon resubmission, its irritation potential will be reexamined using other test techniques on animals. prior to possible prophetic patch testing in humans, at concentrations which have been shown not to produce primary irritation in animals.)

CATEGORY V - Compounds impossible to classify because of staining of the skin or other masking effects owing to physical properties of the compound. (INTERPRETATION: Not suitable for use on humans.)

EYE CATEGORIES:

A. Compounds noninjurious to the eye. INTERPRETATION: Irritation of human eyes is not expected if the compound should accidentally get into the eyes, provided it is washed out as soon as possible.

B. Compounds producing mild injury to the cornea. INTERPRETATION: Should be used with caution around the eyes.

C. Compounds producing mild injury to the cornea, and in addition some injury to the conjunctiva. INTERPRETATION: Should be used with caution around the eyes and mucosa.

D. Compounds producing moderate injury to the cornea. INTERPRETATION: Should be used with extreme caution around the eyes.

E. Compounds producing moderate injury to the cornea, and in addition producing some injury to the conjunctiva. INTERPRETATION: Should be used with extreme caution around the eyes and mucosa.

F. Compounds producing severe injury to the cornea and to the conjunctiva. INTERPRETATION: Should be used with extreme caution. It is recommended that use be restricted to areas other than the face.